Analytical Data Summary at the Velsicol Chemical Corporation Superfund Site, Operable Unit 3-Additional Investigation, St. Louis, Michigan

PREPARED FOR: U.S. Environmental Protection Agency

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Introduction

This memorandum presents the data validation of the soil/sediment and surface water samples collected during the investigation at the Velsicol Operable Unit 3 Superfund Site in St. Louis, Michigan, from November 26 to November 28, 2018.

The objective of this sampling was to assess if dichlorodiphenyl trichlorethane (DDT) concentrations are present in riverbank soils and suspended solids transported by river water at concentrations that would cause elevated DDT concentrations in fish downstream of the St. Louis hydroelectric dam. The field investigation activities are detailed in the *Work Plan Technical Memorandum: Velsicol Chemical Corporation – Operable Unit 3 Pine River Riverbank and in-Stream Sampling, St. Louis, Michigan* (CH2M 2018). Guidance for this data quality evaluation (DQE) assessment came from the following: *U.S. Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA 2017a); *USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2017b)*;* and individual method requirements. The analytical results were evaluated using the criteria of precision, accuracy, representativeness, comparability and completeness (PARCC).

The sampling was performed by CH2M HILL Engineers, Inc. (CH2M). The analyses were performed by CT Laboratories in Baraboo, Wisconsin. The samples were reported in two sample delivery groups (SDGs): 141354 and 141404. The summary of the samples collected are listed in Table 1. One hundred percent of this data was reviewed. This report is intended as a general data quality assessment designed to summarize data issues.

TABLE 1
Sample Summary

SDG Number	Number of Samples	Field Duplicate	Laboratory	Analysis
141354	54 soil/sediment samples	6 FDs	CT Laboratories in Baraboo, Wisconsin	Total DDT (4,4'-DDT, 4,4'-DDE, 4,4'-DDD, 2,4'-DDT, 2,4'-DDE, and 2,4'-DDD) by SW-846 3546/8081B
141354	4 soil/sediment samples	None	CT Laboratories in Baraboo, Wisconsin	TOC by Lloyd Kahn/SW-846 9060A
141404	39 soil/sediment samples	4 FDs	CT Laboratories in Baraboo, Wisconsin	Total DDT (4,4'-DDT, 4,4'-DDE, 4,4'-DDD, 2,4'-DDT, 2,4'-DDE, and 2,4'-DDD) by SW-846 3546/8081B
141404	6 soil/sediment samples	None	CT Laboratories in Baraboo, Wisconsin	TOC by Lloyd Kahn/SW-846 9060A
141404	5 surface water samples	1 FD	CT Laboratories in Baraboo, Wisconsin	Total DDT (4,4'-DDT, 4,4'-DDE, 4,4'-DDD, 2,4'-DDT, 2,4'-DDE, and 2,4'-DDD) by SW-846 3510/8081B

FD = field duplicate, DDD = dichlorodiphenyl dichloroethane, DDE = dichlorodiphenyl dichloroethylene, DDT = dichlorodiphenyl trichloroethane, Total DDT = 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, TOC =Total Organic Carbon

Analytical Data

As part of the quality assurance (QA) process, quality control (QC) samples were collected in the field to complement the assessment of overall data quality and usability. The QC samples consisted of field duplicates (FDs) and aliquots for laboratory matrix spike (MS)/matrix spike duplicates (MSDs).

Samples were collected and shipped by overnight carrier to the laboratory for analysis.

The data were reviewed to assess their analytical accuracy, precision, and completeness. The assessment of data included a review of the following:

- Completeness (that is, verification that all of the samples were analyzed for the requested analytical parameters)
- Chain-of-custody documentation
- Holding times and sample receipt conditions
- Required QC samples at the specified frequency
- Initial calibration and continuing calibration precision and accuracy
- Blank contamination and, if any, its impact on the analytical results
- Laboratory control sample (LCS) accuracy
- MS/MSD precision and accuracy
- Laboratory duplicate precision (where applicable)
- Surrogate spike recoveries for organic analyses
- FD precision
- Column differential precision (where applicable)

Standard data qualifiers were added as a means of classifying the data as to their conformance to QA/QC requirements. The qualifiers are entered into the electronic database. Multiple qualifiers are routinely applied to specific sample method/matrix/analyte combinations, but there will be only one final qualifier. A final qualifier is applied to the data and is the most conservative of the applied validation qualifiers. The data qualifiers are defined as follows:

[U] The analyte was analyzed for, but was not detected above the reported sample method detection limit (MDL).

[J] The analyte was present but the reported value may not be accurate or precise (estimated). The result is estimated because it is less than the referenced reporting limit (RL) but greater than the MDL or due to a QC exceedance.

Findings

The overall summaries of the data validation are contained in the following sections. All soil/sediment samples required a 20-time initial dilution due to laboratory determined matrix interferences in order to meet calibration criteria for certain analytes. All surface water samples were analyzed undiluted. Qualified data are presented in attached Table 2.

Holding Time, Preservation and Sample Receipt Conditions

Holding time, preservation, storage and overall sample receipt conditions met all acceptance criteria.

Calibration

Initial and continuing calibration analyses were performed by the methods requiring their use, and all acceptance criteria were met.

Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination.

Calibration Blanks

Calibration blanks were analyzed at the required frequency by the methods requiring their use and were free of contamination.

Laboratory Control Samples

LCS samples were analyzed as required, and all accuracy criteria were met.

Matrix Spikes

MS/MSD samples were analyzed as required and all accuracy and precision criteria were generally met with the following exceptions:

- 2,4'-DDD and 2,4'-DDE were recovered greater than the upper control limit in the MS and MSD of sample 19CE01-37 (VCS-OU3-SO233/0-2-1118), indicating a possible high bias. All associated results in the parent sample were non-detect and were therefore not qualified.
- The MSD of sample 19CE01-37 (VCS-OU3-SO233/0-2-1118) recovered 2,4'-DDT and 4,4'-DDD less than ten percent, indicating a possible extremely low bias. The detected results were qualified as estimated and flagged "J" in the parent sample.
- The MS/MSD relative percent difference (RPD) of sample 19CE01-37 (VCS-OU3-SO233/0-2-1118) was exceeded for 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD and 4,4'-DDT. The detected results were qualified as estimated and flagged "J" in the parent sample. The non-detected results were not qualified.
- The MS/MSD RPD of sample 19CE01-43 (VCS-OU3-SO235/0-2-1118) was exceeded for 2,4'-DDT and 4,4'-DDT. The detected results were qualified as estimated and flagged "J" in the parent sample.
- 2,4'-DDE was recovered greater than the upper control limit in the MSD of sample 19CE01-65 (VCS-OU3-SO241/6-12-1118). The detected result was qualified as estimated and flagged "J" in the parent sample.
- The MS/MSD RPD of sample 19CE01-65 (VCS-OU3-SO241/6-12-1118) was exceeded for 2,4'-DDD, 4,4'-DDD and 4,4'-DDE. The detected results were qualified as estimated and flagged "J" in the parent sample.
- 2,4'-DDE was recovered greater than the upper control limit in the MS of sample 19CE01-86 (VCS-OU3-SO248/0-2-1118). The associated result in the parent sample was non-detect and was therefore not qualified.
- The MS/MSD RPD of sample 19CE01-86 (VCS-OU3-SO248/0-2-1118) was exceeded for 2,4'-DDD, 2,4'-DDT and 4,4'-DDT. The detected results were qualified as estimated and flagged "J" in the parent sample. The non-detected result was not qualified.
- 2,2'-DDD and 2,4'-DDT were recovered greater than the upper control limit in the MS of sample 19CE02-07 (VCS-OU3-SO254/0-2-1118). The detected results were qualified as estimated and flagged "J" in the parent sample.
- The MS/MSD RPD of sample 19CE02-08 (VCS-OU3-SO254/2-6-1118) was exceeded for 4,4'-DDT. The detected result was qualified as estimated and flagged "J" in the parent sample.
- MS/MSDs recovered greater than four times than the amount of spike added or were diluted out were not qualified.

Laboratory Duplicates

Laboratory duplicates were analyzed by the methods requiring their use and the RPDs were generally within the established QC limits of less than 30 percent. The RPD between the field sample and the laboratory duplicate exceeded control limits for the sample listed below. The result was qualified as an estimated detected result and flagged "J" in the associated sample.

- TOC for sample 19CE01-86 (VCS-OU3-SO248/0-2-1118)

Surrogates

Surrogates were added as required, and all acceptance criteria were met with the following exceptions:

- One pesticide surrogate was recovered greater than the upper control limit in samples 19CE01-53 (VCS-OU3-SO238/0-2-1118), 19CE01-54 (VCS-OU3-SO238/2-6-1118), 19CE01-55 (VCS-OU3-SO-FD05-1118), 19CE01-56 (VCS-OU3-SO238/6-12-1118), 19CE01-57 (VCS-OU3-SO239/0-2-1118), 19CE01-58 (VCS-OU3-SO239/2-6-1118), 19CE01-59 (VCS-OU3-SO239/6-12-1118), 19CE01-60 (VCS-OU3-SO240/0-2-1118), 19CE01-63 (VCS-OU3-SO241/0-2-1118), 19CE01-65 (VCS-OU3-SO241/6-12-1118), 19CE01-66 (VCS-OU3-SO-FD06-1118), 19CE01-67 (VCS-OU3-SO242/0-2-1118), 19CE01-68 (VCS-OU3-SO242/2-6-1118), 19CE01-69 (VCS-OU3-SO242/6-12-1118) and 19CE01-72 (VCS-OU3-SO243/6-12-1118), indicating a possible high bias. Detected results were qualified as estimated and flagged "J" in the associated samples. Non-detected results were not qualified.
- Surrogates that were diluted out were not qualified.

Field Duplicates

FDs were collected and analyzed as required, and the RPDs were generally within the established QC limits of less than 30 percent for soil/sediment and less than 25 percent for surface water. The RPD between the field sample and the FD exceeded control limits for the samples listed below. The associated results were qualified as estimated detected results and flagged "J" in the FD and parent sample.

- 4,4'-DDD, 4,4'-DDT and total DDT for samples 19CE01-11 and 19CE01-17 (VCS-OU3-SO-FD01-1118 and VCS-OU3-SO227/0-2-1118)
- 2,4'-DDT and 4,4'-DDT for samples 19CE01-22 and 19CE01-37 (VCS-OU3-SO-FD02-1118 and VCS-OU3-SO233/0-2-1118)
- 2,4'-DDT for samples 19CE01-43 and 19CE01-44 (VCS-OU3-SO235/0-2-1118 and VCS-OU3-SO-FD04-1118)
- 4,4'-DDT and total DDT for samples 19CE01-54 and 19CE01-55 (VCS-OU3-SO238/2-6-1118 and VCS-OU3-SO-FD05-1118
- 2,4'-DDD, 2,2'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT and total DDT for samples 19CE01-65 and 19CE01-66 (VCS-OU3-SO241/6-12-1118 and VCS-OU3-SO-FD06-1118
- 4,4'-DDT and total DDT for samples 19CE01-77 and 19CE01-80 (VCS-OU3-SO-FD07-1118 and VCS-OU3-SO246/0-2-1118
- 2,4'-DDD, 4,4'-DDE, 4,4'-DDT and total DDT for samples 19CE01-87 and 19CE01-88 (VCS-OU3-SO248/2-6-1118 and VCS-OU3-SO-FD08-1118
- 2,4'-DDT and total DDT for samples 19CE02-09 and 19CE02-10 (VCS-OU3-SO254/6-12-1118 and VCS-OU3-SO-FD10-1118

Column Differential

The RPD between the primary and confirmation columns were calculated to determine the precision of the pesticide results. The RPDs were generally within the established QC limits of less than 40 percent. The samples listed below exceeded the control limits. The results were qualified as estimated detected results and flagged "J" in the associated samples.

- 2,4'-DDE for samples 19CE01-16 (VCS-OU3-SO226/6-12-1118), 19CE01-20 (VCS-OU3-SO228/0-2-1118), 19CE01-21 (VCS-OU3-SO228/2-6-1118), 19CE01-26 (VCS-OU3-SO229/6-12-1118), 19CE01-27 (VCS-OU3-SO230/0-2-11181), 19CE01-29 (VCS-OU3-SO230/6-12-1118), 19CE01-35 (VCS-OU3-SO232/6-12-1118), 19CE01-43 (VCS-OU3-SO235/0-2-1118), 19CE01-44 (VCS-OU3-SO-FD04-1118), 19CE01-51 (VCS-OU3-

SO237/2-6-1118), 19CE01-52 (VCS-OU3-SO237/6-12-1118), 19CE01-54 (VCS-OU3-SO238/2-6-1118), 19CE01-61 (VCS-OU3-SO240/2-6-1118) and 19CE01-78 (VCS-OU3-SO245/2-6-1118).

Chain of Custody

Required procedures were followed and were free of errors.

Overall Assessment

The goal of this assessment is to demonstrate that a sufficient number of representative samples was collected and the resulting analytical data can be used to support the decision making process. The following summary highlights the PARCC findings for the above-defined events:

- Precision of the data was verified through the review of the field and laboratory data quality indicators that include MS/MSD, laboratory duplicate, FD and column differential RPDs. Precision was generally acceptable with multiple analytes being qualified as estimated detected results in several samples due to MS/MSD, laboratory duplicate, FD and column differential RPD issues. Data users should consider the impact to any result that is qualified as estimated as it may contain a bias that could affect the decision making process.
- Accuracy of the data was verified through the review of the calibration data, LCS, MS/MSD and surrogate recoveries, as well as the evaluation of method and calibration blank data. Accuracy was generally acceptable with multiple analytes being qualified as estimated detected results in several samples due to MS/MSD and surrogate recovery issues. The method and calibration blanks were free of contamination.
- Representativeness of the data was verified through the sample's collection, storage and preservation procedures, verification of holding-time compliance and the overall sample receipt conditions. The laboratory did not note any problems with the sample collection, storage, and/or preservation procedures. All data reported from analyses were within the USEPA recommended hold-time.
- Comparability of the data was ensured through the use of standard USEPA analytical procedures and standard units for reporting. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.
- Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as all data that are not rejected for project use. All data were considered valid. The completeness goal was met for all analytes.

References

CH2M. 2018. *Work Plan Technical Memorandum—Velsicol Chemical Corporation – Operable Unit 3 Pine River Riverbank and In-Stream Sampling, St. Louis, Michigan.* September.

USEPA. 2017a. *National Functional Guidelines for Organic Superfund Methods Data Review*. January.

USEPA. 2017b. *National Functional Guidelines for Inorganic Superfund Methods Data Review*. January.

TABLE 2

Data Qualification Data

Data Quality Evaluation for Velsicol Chemical Corporation Superfund Site, Operable Unit 3-Additional Investigation

Method	NativeID	SDG Number	Analyte	Units	Final Result	Validation Flag	Validation Reason
SW8081B	19CE01-11	141354	4,4'-DDD	ug/kg	29.2	J	FD>RPD
SW8081B	19CE01-11	141354	4,4'-DDT	ug/kg	98	J	FD>RPD
SW8081B	19CE01-11	141354	Total DDT	ug/kg	180	J	FD>RPD
SW8081B	19CE01-16	141354	2,4'-DDE	ug/kg	68.5	J	ColConf>RPD
SW8081B	19CE01-17	141354	4,4'-DDD	ug/kg	17.8	J	FD>RPD
SW8081B	19CE01-17	141354	4,4'-DDT	ug/kg	40.1	J	FD>RPD
SW8081B	19CE01-17	141354	Total DDT	ug/kg	58	J	FD>RPD
SW8081B	19CE01-20	141354	2,4'-DDE	ug/kg	19.8	J	ColConf>RPD
SW8081B	19CE01-21	141354	2,4'-DDE	ug/kg	21	J	ColConf>RPD
SW8081B	19CE01-22	141354	2,4'-DDT	ug/kg	245	J	FD>RPD
SW8081B	19CE01-22	141354	4,4'-DDT	ug/kg	2150	J	FD>RPD
SW8081B	19CE01-26	141354	2,4'-DDE	ug/kg	25.1	J	ColConf>RPD
SW8081B	19CE01-27	141354	2,4'-DDE	ug/kg	24.6	J	ColConf>RPD
SW8081B	19CE01-29	141354	2,4'-DDE	ug/kg	92.1	J	ColConf>RPD
SW8081B	19CE01-35	141354	2,4'-DDE	ug/kg	83	J	ColConf>RPD
SW8081B	19CE01-37	141354	2,4'-DDT	ug/kg	134	J	FD>RPD, MSD<10%, MS/MSD RPD
SW8081B	19CE01-37	141354	4,4'-DDD	ug/kg	255	J	MSD<10%, MS/MSD RPD
SW8081B	19CE01-37	141354	4,4'-DDT	ug/kg	3140	J	FD>RPD, MS/MSD RPD
SW8081B	19CE01-43	141354	2,4'-DDE	ug/kg	114	J	ColConf>RPD
SW8081B	19CE01-43	141354	2,4'-DDT	ug/kg	571	J	FD>RPD, MS/MSD RPD
SW8081B	19CE01-43	141354	4,4'-DDT	ug/kg	5360	J	MS/MSD RPD
SW8081B	19CE01-44	141354	2,4'-DDE	ug/kg	117	J	ColConf>RPD
SW8081B	19CE01-44	141354	2,4'-DDT	ug/kg	365	J	FD>RPD
SW8081B	19CE01-51	141354	2,4'-DDE	ug/kg	117	J	ColConf>RPD
SW8081B	19CE01-52	141354	2,4'-DDE	ug/kg	87.3	J	ColConf>RPD
SW8081B	19CE01-53	141354	2,4'-DDD	ug/kg	425	J	Sur>UCL
SW8081B	19CE01-53	141354	2,4'-DDE	ug/kg	107	J	Sur>UCL
SW8081B	19CE01-53	141354	2,4'-DDT	ug/kg	89.6	J	Sur>UCL
SW8081B	19CE01-53	141354	4,4'-DDD	ug/kg	356	J	Sur>UCL
SW8081B	19CE01-53	141354	4,4'-DDE	ug/kg	619	J	Sur>UCL
SW8081B	19CE01-53	141354	4,4'-DDT	ug/kg	575	J	Sur>UCL
SW8081B	19CE01-53	141354	Total DDT	ug/kg	2200	J	Sur>UCL
SW8081B	19CE01-54	141354	2,4'-DDD	ug/kg	143	J	Sur>UCL
SW8081B	19CE01-54	141354	2,4'-DDE	ug/kg	43.3	J	Sur>UCL, ColConf>RPD
SW8081B	19CE01-54	141354	4,4'-DDD	ug/kg	94.2	J	Sur>UCL
SW8081B	19CE01-54	141354	4,4'-DDE	ug/kg	199	J	Sur>UCL
SW8081B	19CE01-54	141354	4,4'-DDT	ug/kg	81.4	J	FD>RPD, Sur>UCL
SW8081B	19CE01-54	141354	Total DDT	ug/kg	560	J	FD>RPD, Sur>UCL
SW8081B	19CE01-55	141354	2,4'-DDD	ug/kg	168	J	Sur>UCL
SW8081B	19CE01-55	141354	2,4'-DDE	ug/kg	52.8	J	Sur>UCL
SW8081B	19CE01-55	141354	2,4'-DDT	ug/kg	33.6	J	Sur>UCL
SW8081B	19CE01-55	141354	4,4'-DDD	ug/kg	110	J	Sur>UCL
SW8081B	19CE01-55	141354	4,4'-DDE	ug/kg	264	J	Sur>UCL

TABLE 2

Data Qualification Data

Data Quality Evaluation for Velsicol Chemical Corporation Superfund Site, Operable Unit 3-Additional Investigation

Method	NativeID	SDG Number	Analyte	Units	Final Result	Validation Flag	Validation Reason
SW8081B	19CE01-55	141354	4,4'-DDT	ug/kg	153	J	FD>RPD, Sur>UCL
SW8081B	19CE01-55	141354	Total DDT	ug/kg	780	J	FD>RPD, Sur>UCL
SW8081B	19CE01-56	141354	4,4'-DDE	ug/kg	43	J	Sur>UCL
SW8081B	19CE01-56	141354	Total DDT	ug/kg	43	J	Sur>UCL
SW8081B	19CE01-57	141354	2,4'-DDD	ug/kg	32	J	Sur>UCL
SW8081B	19CE01-57	141354	2,4'-DDT	ug/kg	26.2	J	Sur>UCL
SW8081B	19CE01-57	141354	4,4'-DDD	ug/kg	55.2	J	Sur>UCL
SW8081B	19CE01-57	141354	4,4'-DDE	ug/kg	416	J	Sur>UCL
SW8081B	19CE01-57	141354	4,4'-DDT	ug/kg	142	J	Sur>UCL
SW8081B	19CE01-57	141354	Total DDT	ug/kg	670	J	Sur>UCL
SW8081B	19CE01-58	141354	2,4'-DDD	ug/kg	113	J	Sur>UCL
SW8081B	19CE01-58	141354	2,4'-DDE	ug/kg	43.5	J	Sur>UCL
SW8081B	19CE01-58	141354	2,4'-DDT	ug/kg	46.4	J	Sur>UCL
SW8081B	19CE01-58	141354	4,4'-DDD	ug/kg	157	J	Sur>UCL
SW8081B	19CE01-58	141354	4,4'-DDE	ug/kg	638	J	Sur>UCL
SW8081B	19CE01-58	141354	4,4'-DDT	ug/kg	626	J	Sur>UCL
SW8081B	19CE01-58	141354	Total DDT	ug/kg	1600	J	Sur>UCL
SW8081B	19CE01-59	141354	2,4'-DDD	ug/kg	1330	J	Sur>UCL
SW8081B	19CE01-59	141354	2,4'-DDE	ug/kg	406	J	Sur>UCL
SW8081B	19CE01-59	141354	2,4'-DDT	ug/kg	80.4	J	Sur>UCL
SW8081B	19CE01-59	141354	4,4'-DDD	ug/kg	1030	J	Sur>UCL
SW8081B	19CE01-59	141354	4,4'-DDE	ug/kg	1430	J	Sur>UCL
SW8081B	19CE01-59	141354	4,4'-DDT	ug/kg	1620	J	Sur>UCL
SW8081B	19CE01-59	141354	Total DDT	ug/kg	5900	J	Sur>UCL
SW8081B	19CE01-60	141354	2,4'-DDD	ug/kg	51.9	J	Sur>UCL
SW8081B	19CE01-60	141354	2,4'-DDT	ug/kg	23.3	J	Sur>UCL
SW8081B	19CE01-60	141354	4,4'-DDD	ug/kg	80.4	J	Sur>UCL
SW8081B	19CE01-60	141354	4,4'-DDE	ug/kg	210	J	Sur>UCL
SW8081B	19CE01-60	141354	4,4'-DDT	ug/kg	166	J	Sur>UCL
SW8081B	19CE01-60	141354	Total DDT	ug/kg	530	J	Sur>UCL
SW8081B	19CE01-61	141354	2,4'-DDE	ug/kg	57.1	J	ColConf>RPD
SW8081B	19CE01-63	141354	2,4'-DDD	ug/kg	1740	J	Sur>UCL
SW8081B	19CE01-63	141354	2,4'-DDE	ug/kg	461	J	Sur>UCL
SW8081B	19CE01-63	141354	2,4'-DDT	ug/kg	117	J	Sur>UCL
SW8081B	19CE01-63	141354	4,4'-DDD	ug/kg	1050	J	Sur>UCL
SW8081B	19CE01-63	141354	4,4'-DDE	ug/kg	1510	J	Sur>UCL
SW8081B	19CE01-63	141354	4,4'-DDT	ug/kg	950	J	Sur>UCL
SW8081B	19CE01-63	141354	Total DDT	ug/kg	5800	J	Sur>UCL
SW8081B	19CE01-65	141354	2,4'-DDD	ug/kg	374	J	FD>RPD, Sur>UCL, MS/MSD RPD
SW8081B	19CE01-65	141354	2,4'-DDE	ug/kg	105	J	FD>RPD, Sur>UCL, MSD>UCL
SW8081B	19CE01-65	141354	2,4'-DDT	ug/kg	28.4	J	FD>RPD, Sur>UCL
SW8081B	19CE01-65	141354	4,4'-DDD	ug/kg	179	J	FD>RPD, Sur>UCL, MS/MSD RPD
SW8081B	19CE01-65	141354	4,4'-DDE	ug/kg	388	J	FD>RPD, Sur>UCL, MS/MSD RPD

TABLE 2

Data Qualification Data

Data Quality Evaluation for Velsicol Chemical Corporation Superfund Site, Operable Unit 3-Additional Investigation

Method	NativeID	SDG Number	Analyte	Units	Final Result	Validation Flag	Validation Reason
SW8081B	19CE01-65	141354	4,4'-DDT	ug/kg	130	J	FD>RPD, Sur>UCL
SW8081B	19CE01-65	141354	Total DDT	ug/kg	1200	J	FD>RPD, Sur>UCL
SW8081B	19CE01-66	141354	2,4'-DDD	ug/kg	1410	J	FD>RPD, Sur>UCL
SW8081B	19CE01-66	141354	2,4'-DDE	ug/kg	333	J	FD>RPD, Sur>UCL
SW8081B	19CE01-66	141354	2,4'-DDT	ug/kg	96.9	J	FD>RPD, Sur>UCL
SW8081B	19CE01-66	141354	4,4'-DDD	ug/kg	559	J	FD>RPD, Sur>UCL
SW8081B	19CE01-66	141354	4,4'-DDE	ug/kg	960	J	FD>RPD, Sur>UCL
SW8081B	19CE01-66	141354	4,4'-DDT	ug/kg	533	J	FD>RPD, Sur>UCL
SW8081B	19CE01-66	141354	Total DDT	ug/kg	3900	J	FD>RPD, Sur>UCL
SW8081B	19CE01-67	141354	2,4'-DDD	ug/kg	31.3	J	Sur>UCL
SW8081B	19CE01-67	141354	4,4'-DDD	ug/kg	52.2	J	Sur>UCL
SW8081B	19CE01-67	141354	4,4'-DDE	ug/kg	203	J	Sur>UCL
SW8081B	19CE01-67	141354	4,4'-DDT	ug/kg	80.9	J	Sur>UCL
SW8081B	19CE01-67	141354	Total DDT	ug/kg	370	J	Sur>UCL
SW8081B	19CE01-68	141354	2,4'-DDD	ug/kg	34.6	J	Sur>UCL
SW8081B	19CE01-68	141354	2,4'-DDT	ug/kg	349	J	Sur>UCL
SW8081B	19CE01-68	141354	4,4'-DDD	ug/kg	117	J	Sur>UCL
SW8081B	19CE01-68	141354	4,4'-DDE	ug/kg	264	J	Sur>UCL
SW8081B	19CE01-68	141354	4,4'-DDT	ug/kg	889	J	Sur>UCL
SW8081B	19CE01-68	141354	Total DDT	ug/kg	1700	J	Sur>UCL
SW8081B	19CE01-69	141354	2,4'-DDD	ug/kg	40.9	J	Sur>UCL
SW8081B	19CE01-69	141354	2,4'-DDT	ug/kg	24.1	J	Sur>UCL
SW8081B	19CE01-69	141354	4,4'-DDD	ug/kg	64.9	J	Sur>UCL
SW8081B	19CE01-69	141354	4,4'-DDE	ug/kg	52.9	J	Sur>UCL
SW8081B	19CE01-69	141354	4,4'-DDT	ug/kg	904	J	Sur>UCL
SW8081B	19CE01-69	141354	Total DDT	ug/kg	1100	J	Sur>UCL
SW8081B	19CE01-72	141354	2,4'-DDD	ug/kg	94.3	J	Sur>UCL
SW8081B	19CE01-72	141354	2,4'-DDE	ug/kg	22.2	J	Sur>UCL
SW8081B	19CE01-72	141354	2,4'-DDT	ug/kg	25	J	Sur>UCL
SW8081B	19CE01-72	141354	4,4'-DDD	ug/kg	144	J	Sur>UCL
SW8081B	19CE01-72	141354	4,4'-DDE	ug/kg	122	J	Sur>UCL
SW8081B	19CE01-72	141354	4,4'-DDT	ug/kg	607	J	Sur>UCL
SW8081B	19CE01-72	141354	Total DDT	ug/kg	1000	J	Sur>UCL
SW8081B	19CE01-77	141404	4,4'-DDT	ug/kg	910	J	FD>RPD
SW8081B	19CE01-77	141404	Total DDT	ug/kg	2500	J	FD>RPD
SW8081B	19CE01-78	141404	2,4'-DDE	ug/kg	22	J	ColConf>RPD
SW8081B	19CE01-80	141404	4,4'-DDT	ug/kg	2040	J	FD>RPD
SW8081B	19CE01-80	141404	Total DDT	ug/kg	3600	J	FD>RPD
SW8081B	19CE01-86	141404	2,4'-DDT	ug/kg	5270	J	MS/MSD RPD
SW8081B	19CE01-86	141404	4,4'-DDT	ug/kg	32000	J	MS/MSD RPD
LYDKHN	19CE01-86	141404	Total Organic Carbon	mg/kg	27700	J	Lab Dup>RPD
SW8081B	19CE01-87	141404	2,4'-DDD	ug/kg	600	J	FD>RPD
SW8081B	19CE01-87	141404	4,4'-DDE	ug/kg	511	J	FD>RPD

TABLE 2

Data Qualification Data

Data Quality Evaluation for Velsicol Chemical Corporation Superfund Site, Operable Unit 3-Additional Investigation

Method	NativeID	SDG Number	Analyte	Units	Final Result	Validation Flag	Validation Reason
SW8081B	19CE01-87	141404	4,4'-DDT	ug/kg	3610	J	FD>RPD
SW8081B	19CE01-87	141404	Total DDT	ug/kg	5900	J	FD>RPD
SW8081B	19CE01-88	141404	2,4'-DDD	ug/kg	384	J	FD>RPD
SW8081B	19CE01-88	141404	4,4'-DDE	ug/kg	1070	J	FD>RPD
SW8081B	19CE01-88	141404	4,4'-DDT	ug/kg	1790	J	FD>RPD
SW8081B	19CE01-88	141404	Total DDT	ug/kg	4300	J	FD>RPD
SW8081B	19CE02-07	141404	2,4'-DDD	ug/kg	114	J	MS>UCL
SW8081B	19CE02-07	141404	2,4'-DDT	ug/kg	117	J	MS>UCL
SW8081B	19CE02-08	141404	4,4'-DDT	ug/kg	1150	J	MS/MSD RPD
SW8081B	19CE02-09	141404	2,4'-DDT	ug/kg	853	J	FD>RPD
SW8081B	19CE02-09	141404	Total DDT	ug/kg	5500	J	FD>RPD
SW8081B	19CE02-10	141404	2,4'-DDT	ug/kg	5550	J	FD>RPD
SW8081B	19CE02-10	141404	Total DDT	ug/kg	12000	J	FD>RPD

Validation Reasons:

ColConf>RPD	The column confirmation exceeded RPD control limits.
FD>RPD	The field duplicate exceeded RPD control limits.
Lab Dup>RPD	The laboratory duplicate exceeded RPD control limits.
MS>UCL	The matrix spike was recovered greater than control limits.
MSD>UCL	The matrix spike duplicate was recovered greater than control limits.
MS/MSD RPD	The matrix spike/matrix spike duplicate exceeded RPD control limits.
MSD<10%	The matrix spike duplicate was recovered less than 10%.
Sur>UCL	The surrogate was recovered greater than control limits.